

The Alaskan Way Seawall

structures have been weakened or destroyed by gribbles. Additionally, shipworms have damaged approximately 55 percent of the wood panels that protect portions of the seawall.

Like the viaduct, the seawall is approaching the end of its useful life, and it's time to replace it.

The seawall will be replaced from about S. Washington Street in Pioneer Square to Broad Street in Belltown. The design for the seawall is dependent upon how we choose to replace the viaduct in the central waterfront. A seawall design that involves strengthening the soil and replacing the existing seawall with a new face panel and L-wall support structure has been considered. Seawall repairs north of the Seattle Aquarium could be completed at a later time.

Design plans for the seawall, which will be replaced as part of the central waterfront project, are based on the latest scientific data about rising sea levels predicted to occur over the next 75 years. The seawall would also be safe in the case of a tsunami: only a tsunami that occurs during high tide could potentially reach one foot higher than the seawall, but a tsunami meeting those conditions is only estimated to occur once every 23,000 to 60,000 years.



The viaduct and the Alaskan Way surface street depend on the seawall.

For More Information:

Visit: www.wsdot.wa.gov/projects/viaduct

Email: viaduct@wsdot.wa.gov

Call: the program information line at 1-888-AWV-LINE

Write: Alaskan Way Viaduct and Seawall Replacement Program
c/o Washington State Department of Transportation

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The Alaskan Way Viaduct & Seawall Replacement Program

03.07

Why Replace the Viaduct and Seawall?

The viaduct's days are numbered. Time, wear and tear from daily traffic, the salty marine air, and earthquakes have taken their toll on the facility. WSDOT continues to monitor and inspect the viaduct, and is also moving forward with critical safety and mobility projects.



Engineer measuring damage on a viaduct support during an inspection.

The Aging Viaduct

Studies in the mid-1990s provided early evidence that the 1950s-era viaduct was nearing the end of its useful life. The viaduct's increasing age and vulnerability was apparent by crumbling concrete, exposed rebar, weakening column connections, and deteriorating railings.

The Nisqually Earthquake

As WSDOT was evaluating the viaduct, the 2001 Nisqually earthquake shook the Puget Sound region. While the viaduct survived the earthquake, the quake damaged the viaduct's joints and columns, further weakening the structure.

Immediately after the earthquake, repairs were made to four sections of the viaduct in the Pioneer Square area near S. Washington Street. In 2001, WSDOT imposed roadway restrictions that remain in effect today; vehicles over 105,500 pounds are prohibited, and trucks and buses must travel in the right-hand lane.



Bracing was installed in the Pioneer Square area after the 2001 Nisqually earthquake.

Replacing the Viaduct



WSDOT engineers regularly check the viaduct's structural safety.

The Viaduct Today

The viaduct is safe for drivers. WSDOT and the City of Seattle proactively monitor the viaduct's condition to ensure additional damage has not occurred. Currently, surveys are done every three months to monitor settlement at certain locations, and full inspections of the entire viaduct are performed every six months to ensure that the viaduct remains safe for the traveling public.

Since 2001, the viaduct has settled a total of five inches. The section near Columbia Street and Yesler Way across from the driving entrance to Colman Dock has experienced the most settlement.

The major risk facing the Alaskan Way Viaduct is its seismic vulnerability. Another major earthquake like the Nisqually would render the viaduct damaged beyond repair. The viaduct stands on fill soil, which is bounded by a seawall that has been eaten away by marine borers. In an earthquake, this soil is subject to liquefaction. Liquefaction is what can happen to loose, wet soils when shaking motion from an earthquake causes the soil to turn into a quicksand-like condition.



This section of the viaduct between Columbia Street and Yesler Way is sinking.



Example of exposed rebar.

Replacing the Viaduct

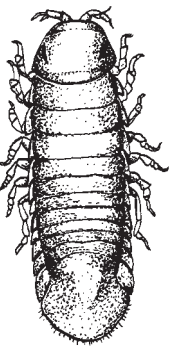
We are moving forward with early safety and mobility projects that will replace or fix more than half of the seismically vulnerable viaduct. These projects are in the north and south end, and will fit whatever final design is chosen for the central waterfront portion of the corridor.

Governor Gregoire has directed that the viaduct be taken down in 2012, to ensure safety. Any replacement for the viaduct would be designed to withstand a major earthquake. Major roadways in Washington are designed to ensure public safety in the event of earthquakes that have a one in 50 chance of occurring in the next 50 years. This standard means that lives are not likely to be in danger if an earthquake occurs.

Soil improvements in the central waterfront and the stadium area will make the soil more stable so it will not liquefy in an earthquake. One method that might be used is deep soil mixing, which involves strengthening soil by mixing it with cement grout injected under pressure. As the soil is mixed, it creates columns of strengthened soil.

The Alaskan Way Seawall

Shortly after the Nisqually earthquake, a section of the Alaskan Way surface street settled into the soil, raising concerns about the condition of the Alaskan Way Seawall. The seawall, built in the 1930s, holds the soil in place along Seattle's waterfront. It also supports the Alaskan Way surface street and many utilities. The viaduct's foundations are embedded in the soil held back by the seawall. If the seawall were to fail, sections of the viaduct, the Alaskan Way surface street, and adjacent structures and utilities could collapse or become unsafe.



Gribble

Further investigations into the seawall's condition have shown that the seawall is worse than expected, and it continues to deteriorate, despite regular maintenance by the City of Seattle. Marine organisms called gribbles have been eating away at the timbers that support the seawall. Inspections have shown that substantial portions of the seawall's timber support



Structures that support the elevated viaduct are cracking.



Increasing crack widths are a safety concern.



Crews during the semi-annual inspection.